

### **Institutional Barrier #3**

#### **Incentive for Distribution Utilities to do Accurate Forecasting**

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**Round Table Lead: Kris Mikkelsen**

**Participants: Ken Corum, Tom Foley**

#### **Problem Statement**

The potential that utility load forecasts are higher than actual loads could lead to new transmission construction in advance of need. There is speculation that some utilities provide load forecasts that are too high, causing transmission to be built ahead of need.

#### **Current Situation**

BPA's Transmission Marketing organization currently prepares load forecasts for approximately 125 of its small customers. The forecasts are done on a one-in-two-year probability basis; i.e., in any given year there is a 50 percent chance of exceeding the forecasted load. Transmission Marketing tries to update customer forecasts every three years, but focus on the highest priority forecasts--a combination of size of load and size of forecast error observed. Transmission Marketing does not include speculative load (either increases or decreases in load) in its forecasts.

For transmission planning purposes, BPA uses **non-coincidental peaks** forecasts. Transmission Planning applies factors to these forecasts to create one-in-twenty-year forecasts to model severe winter conditions.

The load of these approximately 125 customers represents 20 to 25 percent of the total Pacific Northwest load (Washington, Oregon, Northern Idaho, Western Montana) modeled in BPA power flow studies. Total winter peak load in the Pacific Northwest is approximately 30,000 MW with the small public utilities representing about 6,000 MW.

Investor-owned utilities (IOUs) and large generating public utilities provide load forecasts directly to BPA's Transmission Planning organization. BPA asks these utilities to provide non-coincidental peak forecasts that are on a one-in-two-year probability basis. The load forecasts are factored up to produce the one-in-twenty-year forecasts for modeling severe winter conditions with the factors most often coming from the utilities.

There is little analysis or verification of load forecasts received from IOUs and the large generating public utilities. The quality of the data varies from utility to utility.

Load forecasts for the Direct Service Industries (DSIs) are generally estimated by each DSI's Transmission AE and provided to Transmission Planning.

#### **Goal**

The desired outcome is for transmission planners to have and use the most reasonable and accurate load forecasts possible when developing transmission plans.

## Tasks

### 1. Determine if there is a problem with load forecasting for transmission planning

**Task:** Through the Northwest Power Pool, perform analyses to determine the accuracy and reasonableness of load forecasts being submitted to BPA and other for transmission planning purposes.

**Who:** Tom Foley

**Due Date:**

**Dollars:**

**Partners:** Retail utilities, PUCs, others??

### 2. Causes of problems related to quality of load forecasts

**Task:** Determine if incentives are needed for more accurate forecasting, and if so, what kind and level of incentives are needed.

**Who:** Tom Foley

**Due Date:**

**Dollars:**

**Partners:**

### 3. What is the appropriate forecast to use?

**Task:** Through the Northwest Power Pool, join the region- and West-wide examination of forecasting that is in progress.

**Task 3a:** Examine the relative merits of coincidental peak or non-coincidental peak load forecasts for transmission planning purposes.

**Task 3b:** Establish the definition of the base case forecast (e.g. one-in-two-year probability).

**Task 3c:** Evaluate and choose a method for translating the base case forecast to the extreme case forecast (e.g. one-in-twenty-year forecast).

**Who:** Ken Corum

**Due Date:**

**Dollars:**

**Partners:**

**4. Determine appropriate assumptions to be used in load forecasting for transmission planning.**

**Task:** Through an existing forum/organization, begin a regional dialogue on what are appropriate assumptions to be used in preparing load forecasts for transmission planning purposes. Two specific assumptions that need to be addressed are (1) whether speculative load changes (increases or decreases) should be considered when preparing load forecasts and (2) what are the appropriate factors to be used to apply to one-in-two-year load forecasts to get to a one-in-twenty-year forecast to represent severe winter conditions. There are likely others.

**Who:**

**Due Date:**

**Dollars:**

**Partners:** Retail utilities, interest groups, PUCs

## Expansion of Task 1

Task 1. Determine if there is a problem in load forecasting for transmission planning.

Subtask 1.1 Are the forecasting methodologies reasonable?

Step 1.1.1 Presentation from TBL staff on forecasting methodology for BPA requirements customers.

Step 1.1.2 Gain an understanding of the forecasting methodology for other utilities.  
Can we get utilities to give us a presentation of their forecasting methodologies for peak loads?

Subtask 1.2 Compare the forecasts with historical peak loads to determine the degree of error.

To protect the confidentiality of actual data, we probably would have to conduct this study through an independent entity that would assure utilities their confidentiality would not be compromised. We would also want to make sure that the answers we get are objective. Brian Silverstein proposed that the Public Power Pool could be this entity. As a first step we need to approach the Power Pool to determine if they are equipped and willing to do the studies.

Step 1.2.1 Determine the scope of the study. (RT)

Step 1.2.2 Contact Power Pool, and discuss with them whether they can and will do the study and also to determine the degree of objectivity they would bring to the study. (Brian: Can you be the initial contact?) Determine if there is a charge, and who pays.

Step 1.2.3 Determine what costs might be incurred, and who pays.

Step 1.2.4 Set up a schedule for the task if scope and costs are agreed to.

Step 1.2.5 If not the Power Pool, who? (Go back to Step 1.2.1 for the next option.).

## Expansion of Task 2

Task 2. Determine if incentives are needed for more accurate forecasting, and if so, what kind and level of incentives are needed.

This task depends to a large degree on what is found in Task 1 of this Load Forecasting issue. If we determine for instance in Task 1 that the forecasts are relatively accurate, then nothing needs to be done in this task. Assuming then that Task 1 determines forecasting should be more accurate, we lay out below an action plan to determine the type and level of incentives to achieve that goal.

Subtask 2.1 Determine why forecasts are inaccurate.

Step 2.1.1 Are the forecasting models poorly designed?

Step 2.1.2 Is the necessary data available, or do utilities rely mostly on guesses and historic loads?

Step 2.1.3. Are the forecasts inaccurate for strategic purposes? That is, do forecasters game the forecasts. One reason for gaming, if it happens, is that BPA customers do not pay for transmission until they actually use it. There may be other reasons to provide inaccurate forecasts.

Subtask 2.2 Create opportunity to improve the forecasts, if they are in error because of faulty forecasting design or lack of data.

Step 2.2.1 Work with forecasters to improve the design of forecasting models.

Step 2.2.2. Work with forecasters to get better data to drive forecasts.

Subtask 2.3. Work to control the use of strategic (gaming) forecasting

Step 2.3.1 Talk to forecasters to convince them that strategic forecasts aimed at getting an advantage over others is not in the best interest of the region or the entity providing the forecasts. If this fails, go to Step 2.3.2.

Step 2.3.2 Devise incentives and/or penalties to inspire accurate forecasting

Step 2.3.2.1 Consider an “imbalance penalty” when forecasts clearly exceed loads put on the system. For example, BPA could look at forecasts versus loads for 5-years after each forecast is submitted. If the loads were always significantly lower than the forecast, a penalty would be imposed.

Step 2.3.2.2 Some utilities may forecast lower peaks than they expect, while hoping to buy non-firm transmission to serve peak loads.

This strategy could be averted by applying a premium to non-firm transmission at coincident peak on BPA's system. We would expect that in a 1 in 20 winter coincident and non-coincident peaks would be closer together in time.

Step 2.3.2.3 Consider whether utilities should pay something to recognize the impact of their individual forecasts on transmission planning. If TBL is expending effort on planning and subsequently building transmission based on load forecasts of others, it seems reasonable for others to pay TBL throughout this period, and then be reimbursed (with interest) as they use the transmission upgrades through a net-billing scheme, or other more direct innovative reimbursement. This type of payment is similar to what FERC has called for in its rules on interconnection of generating facility greater than 20 MWe. In the FERC rule, generators would have to pay to interconnect to the system and to expand the the system to the extent its plant required system expansion. It would reimbursed over 5-years by the transmission owner/provider.

Step 2.3.2.4 Other ideas????

#### Expansion of Task 4

Task 4. Determine appropriate assumptions to be used in load forecasting for transmission planning.

Subtask 4.1 Are there NERC or WECC reliability criteria that provide any guidance on major assumptions related to load forecasts used in transmission planning?

Subtask 4.2 Does the Battelle study that was prepared a number of years ago need to be updated for use in converting one-in-two-year load forecasts to one-in-twenty-year load forecasts (severe winter)? Is it reasonable to use the same factor to develop severe winter forecasts for all utilities in the Pacific Northwest?

Subtask 4.3 Are all utilities excluding speculative loads (which would result in either increases or decreases in retail load) from their load forecasts? If not, should the region attempt to reach consensus on whether speculative loads should be included or excluded from load forecasts for transmission planning purposes?